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10/700,096	11/03/2003	Jin Tak Kim	CU-3423 RJS	2817

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EXAMINER

PERVAN, MICHAEL

ART UNIT	PAPER NUMBER
2629	

DATE MAILED: 05/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: On page 5 of the specification paragraph 4, line 1, "400" should instead be –300–. Also on page 5, paragraph 4, line 3, the examiner feels the change should be –conversion board device– instead of "LCD module". However, if this is not the case, then the change should be –400– instead of "300".

Appropriate correction is required.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the connection from the input unit 402 to the timing controller 404 in Figures 1 and 2 and the PWM signal 306 being outputted to the input unit 402 and then transferred to the voltage generating unit 404 in Figure 2 as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief

Art Unit: 2629

description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. Figures 4a and 4b should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claim 2 is objected to because of the following informalities: line 5 "the controller" should instead be --the timing controller--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 2629

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (APA) in view of linuma (US 2001/0043203).

In regards to claim 1, the APA discloses (Figure 1) a device for adjusting control signals for an LCD, comprising: an LCD module (100) having an LCD panel (106) for displaying a picture, a timing controller (110) for adjusting a data supply and a driving signal (pg. 1, line 24-pg.2, line 3), a voltage generating unit (112) for generating a driving voltage (pg. 2, lines 3-5) and an input unit (116) provided with a plurality of control signal pins which are adjusted by an external adjustment signal (pg. 1, lines 15-21; the input unit receives signals from the outside (external) that control (adjust) the above units, namely LCD panel, timing controller, voltage generating unit and a control signal generating unit, therefore it has a plurality of control signals that are adjusted by an external adjustment signal); and a conversion board device (200) having a scaler unit (202) for generating and providing data (pg. 2, lines 9-11) and a power supply required for the LCD module and a power supply unit (204) (pg. 2, lines 11-13).

The APA does not disclose wherein the scaler is provided with microcomputer GPIO ports, and the microcomputer GPIO ports control the plurality of control signal pins provided in the input unit.

linuma discloses microcomputer GPIO ports (paragraph 56; Graphic controller is outside the display and has GPIO terminal).

It would have been obvious at the time of invention to modify the APA by incorporating the teachings of linuma, a graphic controller, provided with a GPIO

Art Unit: 2629

terminal, is connected to an IO terminal of a flat panel controller, by adding the graphic controller of linuma to the scaler unit of the APA because GPIO devices provide a set of IO ports which can be configured for either input or output, support for common bus protocols like I²C, SPI and SMBus serial buses are cheaper than using a microcontroller.

In regards to claim 2, the APA and linuma disclose the plurality of control signal pins are for signals of FRC_EN, TDDI, LVDS_MAP_SEL, and the signals are properly adjusted under the control of the microcomputer GPIO ports to be transferred to the controller (pg. 1, lines 15-21; since the input unit receives signals from the GPIO terminal of the scaler unit to control the above units, namely LCD panel, timing controller, voltage generating unit and a control signal generating unit, and the control signal generating unit generates FRC_Enable, LVDS_MAP_SEL and TDDI signals, therefore the control FRC_Enable, LVDS_MAP_SEL and TDDI signals are properly adjusted by GPIO ports).

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over the APA in view of linuma and in further view of Yamazaki et al (US 6,778,159).

In regards to claim 3, the APA and linuma do not disclose the conversion board device generating a PWM signal for adjusting a common voltage.

Yamazaki discloses (Figure 4) the conversion board device (A/D Converter and Signal Processor) generating a PWM signal for adjusting a common voltage (col. 6, line 41-col. 7, line 35; A/D Converter (scaler), which is outside the panel, digitizes the data and then outputs to the Signal Processor, which is also outside the panel, then

Art Unit: 2629

generates the signal with different pulse widths and voltages (PWM) and then outputs to the shift registers, which then output the voltage when the drivers are turned on).

It would have been obvious at the time of invention to modify the APA and linuma by incorporating Yamazaki, A/D Converter (scaler), which is outside the panel, digitizes the data and then outputs to the Signal Processor, which is also outside the panel, then generates the signal with different pulse widths and voltages (PWM) and then outputs to the shift registers, which then output the voltage when the drivers are turned on, because it improves high-gradation displaying operation (col. 7, lines 46-48).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art (Park US 6,816,139) is deemed relevant since it discusses control signals being external to the LCD panel.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Pervan whose telephone number is (571) 272-0910. The examiner can normally be reached on Monday - Friday between 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2629

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MVP
Apr. 28, 2006

AMR A. AWAD
PRIMARY EXAMINER

A handwritten signature in black ink, appearing to read "Amr A. Awad", written in a cursive style.